CLAIMS

1. A memory tag responsive to a signal generated by a reader, the tag comprising a resonant circuit part having a resonant frequency and a rectifying circuit part operable to rectify a signal received from the resonant circuit part to supply power to a memory, the resonant frequency of the resonant circuit part being variable in accordance with data to be transmitted to transmit data to the reader, the power supplied by the rectifying circuit part being substantially constant.

2. A memory tag according to claim 1 wherein the resonant circuit part comprises a variable capacitance element, the variable capacitance element being controllable to vary the resonant frequency of the resonant circuit part.

3. A memory tag according to claim 2 wherein the resonant circuit part comprises an inductor and a first capacitor, and wherein the variable capacitance element comprises a second capacitor connected in parallel with the first capacitor and in series with a switch operable to switch the second capacitor element out of the circuit.

4. A memory tag according to claim 2 wherein the resonant circuit part comprises an inductor and wherein the controllable capacitive element comprises a varactor diode connected in parallel with the inductor and wherein a control line is connected to the cathode of the varactor diode to vary the reverse bias voltage of the varactor diode.

5. A memory tag according to claim 4 wherein the resonant circuit part comprises a first capacitor connected in parallel with the inductor.

6. A memory tag according to claim 2 wherein the controllable capacitance element is set to have a first capacitance corresponding to a binary "one" and a second capacitance corresponding to a binary "zero".

7. A memory tag responsive to a signal generated by a reader, the tag comprising a resonant circuit part having a resonant frequency, the resonant frequency of the resonant circuit part being variable in accordance with data to be transmitted to transmit data to the reader, the resonant circuit part comprising a variable capacitance element wherein the variable capacitance element is controllable to vary the resonant frequency of the resonant circuit part.

8. A memory tag according to claim 7 comprising a rectifying circuit part operable to rectify a signal received from the resonant circuit part to supply power to a memory.

9. A memory tag according to claim 7 wherein the resonant circuit part comprises an inductor and a first capacitor, and wherein the variable capacitance element comprises a second capacitor connected in parallel with the first capacitor and in series with a switch operable to switch the second capacitor element out of the circuit.

10. A memory tag according to claim 7 wherein the resonant circuit part comprises an inductor and wherein the controllable capacitive element comprises a varactor diode connected in parallel with the inductor and wherein a control line is connected to the cathode of the varactor diode to vary the reverse bias voltage of the varactor diode.

11. A memory tag according to claim 7, wherein the tag is operable to vary the resonant frequency of the resonant circuit part by setting the resonant frequency of the resonant circuit part to one of a first resonant frequency and a second resonant frequency, such that relative to a reader resonant frequency of a resonant circuit part of the reader, the first resonant frequency and the second frequency lie on either side of the reader resonant frequency.

12. A reader for reading a memory tag, the reader comprising a frequency source to generate a driving signal and a resonant circuit part connected to the frequency source operable to provide inductive coupling to a tag, the reader being operable to receive information from a tag via the resonant circuit part, the reader comprising a demodulator operable to compare a reference signal corresponding to the driving signal generated by the frequency source and a reflected signal from the resonant circuit part and generate an output depending on the relative phase of the reference signal and the reflected signal, the demodulator comprising a multiplier operable to multiply the reference signal and the reflected signal and a low pass filter to pass a signal corresponding to the relative phase.

13. A method of transmitting data from a memory tag to a reader, wherein the tag comprises a resonant circuit part having a resonant frequency, the method comprising the step of varying the resonant frequency of the resonant circuit part to transmit data to the reader, wherein the resonant circuit part comprises a variable capacitance element, and the step of varying the resonant frequency of the resonant circuit part comprising the step of varying the capacitance of the variable capacitance element.

14. In combination, a memory tag and a reader for reading the memory tag, the reader comprising a frequency source to generate a driving signal and a

resonant circuit part having a reader resonant frequency connected to the frequency source operable to provide inductive coupling to a tag,

the memory tag comprising a resonant circuit part having a tag resonant frequency, the tag resonant frequency of the resonant circuit part being variable relative to the reader resonant frequency of the reader resonant circuit part to transmit data to the reader, the memory tag further comprising a rectifying circuit operable to rectify signal received from the memory tag resonant circuit part when inductively coupled with the reader resonant circuit part to supply power to a memory of the tag,

the reader comprising a demodulator operable to compare a reference signal corresponding to the driving signal and a reflected signal from the resonant circuit part, the relative phase of the reference signal and the reflected signal being dependent on the resonant frequency of the memory tag resonant circuit part, and generate an output depending on the relative phase of the reference signal and the reflected signal,

the power supplied by the rectifying circuit part to the memory being substantially constant.

15. A memory tag and a reader according to claim 14 wherein the resonant circuit part of the memory tag comprises a variable capacitance element, the variable capacitance element being controllable to vary the resonant frequency of the resonant circuit part.

16. A method of transmitting data from a memory tag to a reader, wherein the tag comprises a resonant circuit part having a resonant frequency, the method comprising the step of varying the resonant frequency of the resonant circuit part to transmit data to the reader, wherein the resonant circuit part comprises a variable capacitance element, and the step of varying the resonant

frequency of the resonant circuit part comprising the step of varying the capacitance of the variable capacitance element.

17. A method according to claim 16 wherein the step of varying the resonant frequency of the resonant circuit part comprises setting the resonant frequency of the resonant circuit part to one of a first resonant frequency and a second resonant frequency, wherein relative to a reader resonant frequency of a resonant circuit part of the reader, the first resonant frequency and the second resonant frequency lie on either side of the reader resonant frequency.

18. A method of reading data from a memory tag, the method comprising the steps of supplying a driving signal to a resonant circuit part of a reader, comparing a reference signal corresponding to the driving signal and a reflected signal reflected from the resonant circuit part, and detecting the relative phase of the reference signal and the reflected signal, wherein the step of comparing the reference signal and the reflected signal comprises the steps of multiplying the reflected signal and the reference signal, and passing the resulting signal through a load pass filter, wherein the output of the low pass filter is dependent on the relative phase.